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AMERICAN INSTITUTE OF CONSULTING ENGINEERS

PROCEEDINGS OF THE ANNUAL MEETING

January 17, 1944

AND

ADDRESS OF GUEST SPEAKER

DR. HARLEY L. LUTZ
Professor of Public Finance
Princeton University

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ON

SOMETHING NEW IN ENGINEERING

or

PERPETUAL MOTION IN PUBLIC DEBT

WITH DISCUSSIONS

OFFICE OF THE SECRETARY
75 WEST STREET
NEW YORK 6, N. Y.

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The Institute is not responsible for any statement made or opinion expressed in its publications

ANNUAL MEETING

of the

American Institute of Consulting Engineers

The Thirty-first Annual Meeting of the American Institute of Consulting Engineers, preceded by a dinner at 7 o'clock, was held Monday, January 17, 1944, at the University Club, 1 West 54th Street, New York City, Rear Admiral R. E. Bakenhus, President of the Institute, presiding.

The following members were present:

R. E. Bakenhus
Walter D. Binger
E. B. Black
Clinton L. Bogert
Albert M. Brosius
Henry Wolcott Buck
George W. Burpee
George H. Burgess
William P. Creager
George C. Diehl
Charles H. Dolan, II
Samuel M. Ellsworth
Carroll A. Farwell
James Forgie
Alonzo J. Hammond
Shortridge Hardesty
Leslie G. Holleran
Philip W. Henry
E. Rowland Hill
W. W. Horner
Ernest E. Howard
John P. Hubbell
Irving V. A. Huie
George L. Lucas
Thomas Meloy
William H. Mueser
George A. Orrok
Henry G. Perring
Lawrence E. Peterson
William M. Piatt
Malcolm Pirnie
Clyde R. Place
A. C. Polk
Henry E. Riggs
James F. Sanborn
Ralph R. Rumery
Thorndike Saville
Frederick W. Scheidenhelm
Charles F. Scott
Albert V. Sielke
Ole Singstad
Carl H. Stengel
Howard M. Turner
Arthur S. Tuttle
N. T. Veatch, Jr.
Edwin F. Wendt
Harold E. Wessman
Ezra B. Whitman

There were also present the following guests:

John W. Armitage
Waldo G. Bowman
John H. Bringhurst
Albert H. Burton
Meredith Campbell
Leon H. Chambers
Frank G. Coates
Ivan C. Crawford
C. M. Chuckrow
Chandler Davis
C. R. DeLong
John V. N. Dorr
C. G. Dunnells
Dean G. Edwards
James F. Fairman
E. L. Filby
J. K. Finch
Robert M. Gates
J. M. Garrelts
Egbert Hardesty
Arthur A. Johnson
Ernest C. Johnson
C. R. Jones
Asa B. Kellog
M. C. Kennedy
Harley L. Lutz
Walton Martin
George B. Massey
Walter Nelson
Roy Palmer
John I. Parcel
A. B. Parsons
Russell B. Paul
W. V. N. Powelson
Antonin Raymond
R. L. Sackett
George T. Seabury
Homer R. Seely
Arthur L. Sherman
Allan Sielke
S. D. Sprong
Harry Taylor
H. P. Trevithick
Stephen L. Tyler
William M. Varker
Louis M. Vidal
Harry R. Westcott
E. C. Williams
W. M. Wilson
William F. Zimmerli

The President: The Thirty-first Annual Meeting of the American Institute of Consulting Engineers is now called to order. The reading of the minutes of the previous meeting which was held January 18, 1943, will be dispensed with if there is no objection, because the minutes were sent to all the membership.

Introductory Remarks

We are meeting here during a period of war, probably the most serious war of all modern times. With the disruptions in civil life and in personal affairs, we may feel gratified that so many of us are able to be present at this meeting. This is not to be regarded as merely a meeting for the fuller enjoyment of life and partaking of the good things that are still available; but it is to be regarded as an occasion where we may be all regaled after the serious year we have passed through individually and severally, and through being here we rebuild our spirits to gain new courage and are all

the more ready for the strenuous times that are sure to come during 1944.

Our first service is to our country whether it be by direct employment in the armed forces, by employment in a civilian capacity, or by the conduct of work that is directly or indirectly contributory to the war effort. What is left over after these duties are performed must go toward the maintenance of the civil functions of our country which cannot be wholly neglected during this period.

Distinguished Guests

This evening we derive inspiration from having with us at the head table representatives of some of the great engineering societies of the United States and I have the privilege of introducing them to you, proceeding from your left and including all except our guest speaker of the evening, whose special introduction is reserved until later, I want to ask each one of the guests if he will please rise as his name is called as an introduction to our audience.

First is Mr. Alonzo J. Hammond, our own vice-president and former President of the American Society of Civil Engineers. (Applause.) The next is Mr. Waldo G. Bowman, the well-known Editor of *Engineering News-Record*. (Applause.) Next comes Mr. C. R. Jones, Vice-President of the American Institute of Electrical Engineers. (Applause.) Then comes Mr. Ezra B. Whitman, President of the American Society of Civil Engineers. (Applause.)

Our guest speaker will have a longer introduction later. Then we proceed and on my left is Mr. Robert M. Gates, recently elected President of the American Society of Mechanical Engineers. (Applause.) Then comes Mr. H. P. Trevithick, President of the Association of Consulting Chemists and Chemical Engineers. (Applause.) Then comes the Director of the American Institute of Mining and Metallurgical Engineers, Mr. Russell B. Paul. (Applause.) Then comes the Treasurer of the American Institute of Chemical Engineers, Mr. C. R. DeLong (applause), and then the President of the New York State Society of Professional Engineers and also an officer in other organizations as well, Mr. James F. Fairman. (Applause.)

Members in the Armed Forces

It is a matter of interest at this time to note the names of those of our members who are in the armed services, the active armed services, or who have been wearing the uniform of our country during this World War No. 2. I doubt if many of them are present; most of them are off on duty somewhere. I will read their

names, and if any of these members are present, I wish they would rise:

Lt. Col. Thomas D. Campbell, Air Corps, overseas duty
Lt. Col. L. Alfred Jenny, overseas duty
Colonel Manuel Font, U. S. Infantry, Puerto Rico, I believe
Lt. Col. E. R. Needles, Corps of Engineers of the Army
Commander E. H. Praeger, Civil Engineering Corps, U. S. Navy
Lt. Col. Carlton S. Proctor, Corps of Engineers, U. S. Army, only recently returned from overseas duty due to a physical breakdown, from which he is rapidly recovering. He is in town, but he wrote us a letter that on the advice of his physicians he couldn't go out this evening.
Lt. Col. Maurice R. Scharff, Corps of Engineers, U. S. Army
Colonel L. J. Sverdrup, Corps of Engineers, U. S. Army, overseas duty
Colonel R. H. Tatlow, III, G.S.C., I suppose that stands for General Staff Corps, U. S. Army
Lieutenant Elmer K. Timby, U. S. Navy

Then we have a guest with us in uniform this evening and I would like particularly to introduce him as he has only recently become Division Engineer of this area, Colonel Burton, Corps of Engineers, U. S. Army. (Applause.)

This list of members of the Institute in the armed services, I believe, is very creditable for an organization of our size and considering also that most of us are beyond the age for being called into the service. Some of us have even retired because of age.

Then there is a very large group of our members who have been either directly employed in civilian capacities by the War and Navy Departments or have served those or other departments directly in the war effort in a professional capacity. This list would be so long that it would take a large proportion of our total membership.

There may be some who are commissioned or are in the service in a civilian capacity of whom we have no present knowledge, and it is only after termination of the war that these lists may be brought to completion, when they should be made an important part of the records of the Institute.

Work of the Institute Committees and Officers

I cannot proceed further without inviting attention to the exceedingly good work done during the past year by our Council and by the various committees. Those committees are: Admissions with Henry Wolcott Buck as Chairman (applause); Professional

Practice and Ethics with Alonzo J. Hammond as Chairman, and we have already met Mr. Hammond; Legislation, first with Alten S. Miller and now Ole Singstad as Chairman (applause); Development with John P. Hubbell as Chairman (applause).

Then there is the Program Committee with George S. Armstrong as Chairman, which job is a real headache as anybody who has been through it for three years may know. The results of the work of the Program Committee have been very satisfactory, very commendable during the past year, culminating with the program for this particular evening.

Then we have a Treasurer, James Forgie, who is a man of great ability and charged with financing important accomplishments with less than a modicum of funds. Can anything be more difficult than that? He is a popular speaker to which the brevity and directness of his remarks have contributed. Mr. Forgie, will you kindly rise and respond? (Applause.)

Last but not least we have Philip W. Henry, our Secretary and a Past President of the Institute. (Applause.) That calls for a few words, Mr. Henry.

Mr. Henry: Well, Mr. President, my words will be few indeed; and what more can I say except that I consider it a great honor to be of service to such a fine body of engineers as we see here tonight. I assure you that it gives me great pleasure to be in this friendly atmosphere. (Applause.)

The President: We know that Mr. Henry is a man with an accumulation of experience that is very real and he has sound knowledge, not only of engineering, but we have found he has sound knowledge of economic problems. His capable administration of affairs of this Institute has carried us through many years with great success. We owe you a great many thanks, Mr. Henry. Mr. Henry has made a report as Secretary which will be published in the proceedings and I advise all the members to read it.

Report of Tellers for Election to the Council

We have appointed two tellers to count the ballots for three new members of the Council that were to be elected. The tellers are Mr. Diehl and Mr. Hubbell. Will the Chairman of the tellers make a report?

Mr. George C. Diehl: Mr. President, I might say that the task of the tellers this year was a little more difficult than before. Heretofore we have seldom had any split ballots, because we recognize the value of organization and we vote as we are told.

We have three candidates named and in the past those candidates have always recognized the wisdom of the Nominating Committee and they acknowledge frankly that they are the three most eminent men who should be selected for this high office; but this year we had one split ticket and, therefore, it took Mr. Hubbell and myself a little longer time to count the ballots.

The result of our count was as follows: 86 votes cast for E. Rowland Hill; 86 votes cast for Enoch R. Needles; 85 votes cast for Carleton S. Proctor and 1 vote cast for Albert V. Sielke. (Laughter and applause.)

THE PRESIDENT: We declare these gentlemen elected as members of the Council to serve for the coming three years. I would like to introduce them now to the members. I know one of them is here—Mr. E. Rowland Hill. (Applause.) I don't believe Colonel Needles is here. He couldn't get away from Washington. And I have already mentioned Colonel Proctor as not being present.

MEMOIRS OF DECEASED MEMBERS

Next comes a rather sad item. In the conduct of human affairs, there are pleasures to record, there are conflicts and there are triumphs; but there is also sadness and tragedy, and we now come to record the loss by death of five of our members since the date of our last meeting. In each case, a memoir has been prepared by an appropriate committee of the Institute and sent to the family of the deceased, and made a part of the records of the Institute with copies to each of the members. I will now read their names:

Charles T. Main, Boston, died March 6, 1943, at the age of 87
J. R. Worcester, Boston, died May 9, 1943; age, 83.
Robert Spurr Weston, Boston, died July 29, 1943; age, 73.
John W. Alvord, Chicago, died July 31, 1943; age, 82.
J. P. Hallihan, Washington, died January 1, 1944; age, 77.

It is notable that the average age of the members we lost this year was over 80 years. That means a long life of hard and successful work. In addition to the five whose names have just been read, there is one who died just before our last Annual Meeting, but the news of his death did not reach us until some time later. I refer to Colonel C. E. Myers of Philadelphia who died in England while in the service on January 15, 1943, at the age of 55. He was on active duty in the Army.

I think it would be appropriate if we all would rise as a tribute to the memory of these very fine men.

(The audience arose and observed a moment of silence.)

Resignation

We have had only one resignation during the year and that was Dr. William O. Hotchkiss who recently retired as President of the Rensselaer Polytechnic Institute and I understand is now in Florida.

New Members

We next come to the evidence of the healthy growth of our organization in the accession of twelve to the membership during the present year as against eight last year and six the year before. I take pleasure in reading the names of the new members, distinguished in the engineering profession every one of them, and will ask each one if present to rise as his name is called:

Charles A. Emerson of New York; Elwyn E. Seelye of New York; Arthur S. Tuttle of New York (applause)—Arthur Tuttle never fails us; George V. T. Burgess of New York—Mr. Burgess, I know, is away in Ontario on business and only today . . .

Mr. George H. Burgess: I am his father; I will rise for him. (Applause.)

The President: We are glad to have the family so well represented, particularly in the only case where father and son are both living members. Mr. Leslie G. Holleran of New York (applause); Mr. William H. Mueser of New York; Prof. James J. Doland of Champaign, Illinois; Mr. Samuel M. Ellsworth of Boston (applause); Mr. Frank M. Gunby of Boston; Mr. Lawrence E. Peterson of Milwaukee (applause); Mr. Charles M. Upham of Washington; Mr. Gustav J. Requardt of Baltimore.

Our gain in membership has doubled our losses. We now have 128 members, and it is interesting to note that from five to seven additional applications are pending and if elected—which seems likely—it will bring our membership well over 130.

Annual Address by President Bakenhus

The Secretary has mapped out the program of this meeting and the next item is an annual address by the President of the organization. I have attempted to put down something here that may be of interest to the membership. I hope to say what the members consider adequate to the occasion and to the period of development that the Institute has reached.

I may say at the beginning that this is my swan song because someone will succeed me tomorrow in this office. What I say in praise of the Institute, I say after a very good opportunity to observe this organization in action. I have come to admire the

membership and what they stand for: more and more service to the public, to the engineering profession, and to the clientele. It is an honorable profession and we must stand—yes, fight—for the honor of our profession and for the right to serve.

The American Institute of Consulting Engineers

The American Institute of Consulting Engineers is different from most other engineering organizations. We are a small group selected from what we know as the parent engineering societies or from the commissioned engineer services of the Army or from the commissioned services of the Navy. We are composed principally of private practicing engineers, with a stipulation that they not be engaged in contracting. Someone has estimated that there are only a few hundred engineers who meet these qualifications in the United States, and that perhaps makes the Institute one of the most exclusive engineering organizations in the world—at least that is the way it was put by one of our late members, Dr. J. A. L. Waddell. The point of view and the reactions of the Institute are largely influenced by this condition. We are compact, a well coordinated body, not confined to any branch of engineering. Our membership includes every type of engineering. The qualifications for membership in this Institute are, however, not to be regarded as a reflection on any other engineer whose practice is in different fields. In the end we are all working for common causes in different groupings.

We do *not* have, as many other engineering organizations *do* have, the system of honorary membership. We feel that it is an honor to be a member of the Institute and comply with its requirements for membership, so we are all honorary members in a way. Then we do not have the system of medals for exceptional technical papers or other professional accomplishments If we did have, I might say that every member would be wearing a medal. That is, he would be wearing a medal if the Treasurer of the Institute could afford to pay for them. I am not at all sure that he would agree to do that, for we are not a "well-heeled" organization and we are rich only in the quality of our membership and in the principles we stand for.

Mental Structure

This is not only a time of war with great concentration on the war effort, but it is a time when men's minds enter into a sort of state of flux. Many civilian practices and living conditions are upset. Many new ideas are propagated. The individual and society are faced with serious changes in the detailed daily situation.

It is mystifying and confusing. Perhaps it is hard for those of us of the older generation to fully get in touch with what is going on. Perhaps we are right; perhaps not. It may be pointed out that any one human mind has but limited capacity. I may boldly state that we really cannot think freely. We cannot think what we want to think or as we wish. We do not have freedom of thought.

Consider for a moment that at birth we not only have certain hereditary instincts, but we are trained from the cradle on to conform to certain customs and habits—first in the family and then in the schools, then as we grow older in various organizations to which we belong. The result is that the mind tends to work only in certain grooves. The individual mind is occupied with many things—the problems of food, clothing, housing, sleep, transportation, and other physical comforts, desires and necessities. These subjects take up so large a proportion of the individual's thought and attention that only a limited part of his possible effort is left for other things.

Even in social relations, politics, science, and finally in engineering, we are governed by customs, habits, and, I may say, certain inhibitions and by certain tendencies that are born into us perhaps. When we think of the time required to work out a single engineering problem, it is startling to realize how little time an individual has left to consider important public problems.

How can any individual acquire the facts that are necessary for him to make a decision in a political issue? He cannot absorb them even if they are available. He acts in accordance with the leadership of a few, hoping that he may thus be right. We are entirely dependent upon the honesty of our leadership in public life. If we do not have that, we cannot have the best government to which we are entitled.

The Point of View

The point of view of the individual mind is an all-important factor in subsequent action. I can illustrate that with an example. Some years ago I was riding on a street-car in Washington down Connecticut Avenue. The sun was in the sky at the left, and on the right there were rather grand-looking houses, with brass railings on the steps leading up to them. I noticed first that the shadow of a railing on the steps was a jagged line as it fell on the treads and risers. Then the car moved ahead and I kept my eye on that jagged line. I was impressed when I realized that a straight railing could have such a crooked shadow. As I moved ahead and was nearly in line with the sun and the railing, that shadow, to the

eye, was perfectly straight. No question about it, it was straight. Then for an instant, as I passed right in line between the sun and the railing, there wasn't any shadow at all. That is a good illustration, showing that what we see depends on the point of view, and how different individuals may get different pictures of the same thing.

That same situation pertains to mental pictures, for what we think we see depends absolutely on our point of view. Conclusions reached from such varying points of view differ greatly. Many arguments and discussions, often reaching violence, result from such differences.

I can give one or two illustrations that are somewhat pertinent. When I was in the South I met an old friend, an engineer who had built a cottage on the shore of the Gulf. That is a warm climate and he built the house up on posts—concrete posts—about three feet high, leaving an open space under the house. He and his wife and two children lived there. Tommy, the young son of about four, did something one day that his mother did not approve. He had violated some inviolable rule. She was about to chastise him and picked up a shingle as she approached him. The boy saw her coming and took refuge under the house. Nobody of the slightest corpulency or no lady in afternoon dress could possibly get under that house, and so the boy sat there in perfect physical and social security. He was happy and not a bit worried.

The father took in the whole situation and he was not going to let the boy get away with that, so he got down on hands and knees and went under the house like a dog on all fours, and with the grim determination of a bulldog. Well, here we have the picture: the point of view of the mother, the point of view of the father, and we have everything but the point of view of little Tommy, age four years.

Tommy had a very original type of mind, of course. His mind had not been trained to operate only in some of these mental grooves. His back was to the scene, but when he heard his father he turned and saw his mother outside with the shingle still in her hand. The father came nearer and nearer, but to Tommy he did not look like a bulldog at all; he had only admiration and a sympathetic feeling toward his father and so when father got near enough, Tommy said, "Oh, hello, daddy, did she chase you under here, too?" (Laughter.) Well, nothing could be done after that.

Then there is another somewhat pertinent story. I don't know whether any of those present have heard the story about the two worms, but after you hear this story *perhaps* you will never take another drink of whiskey. Please don't leave though just now because it is going to turn out all right.

When prohibition went out, there was a teacher in Nebraska who was afraid the results might be disastrous to the rising generation, so she decided to conduct an experiment before the class of children. She took two glasses of clear water and two earthworms. She put one worm in a clear glass of water and that worm was perfectly happy there swimming around.

Into the other glass of water she put about three or four fingers of whiskey and then put the other worm into this liquid. That worm was exhilarated at first, then took on the characteristics of an inarticulate inebriate, but it was just too much and it soon died, shall we say, a natural death—at least it died. So the teacher had the whole problem solved. She had conducted this experiment successfully and now she wanted to hammer the point home.

She said to the children, "Now, children, you have seen this experiment. What does it teach us?" They all waited a minute because they had been taught to think before they talked and finally little Johnny raised his hand and the teacher said, "Well, Johnny, what does this experiment teach us?" "Oh, teacher, it proves to us that a man who drinks whiskey will never have worms." (Laughter.) Here you have again a case of the mental point of view.

Classification by Mental Characteristics

Allow me to amplify what I said before—that we cannot think what we wish to think because of limits to our mental capacity and the influences that fix our point of view. Undoubtedly the point of view is hereditary to some extent, whatever that may mean. For instance, I do not believe that the subject of anthropological psychology has been very far advanced. When we think of anthropology we think of the color of the skin, color and type of hair, the eyes, nostrils, stature and certain other items of physical build which can be readily measured or described. We have thus classified human beings of the world into various races.

Not much consideration has been given to the fact that mental characteristics may differ even more widely than physical characteristics in peoples of different races or types. So far as I know, we do not even have the terminology or systems of classification for mental characteristics. No scientific analysis of this subject has been made, or at least if it has it is not widely known. To us such a mental analysis seems highly complicated and perhaps impossible. That was the mental attitude also when such subjects as electricity, radio and other of the great developments first dawned on the human mind. The great botanists, zoologists and bacteriologists faced similar problems and it has taken one hundred years to study such subjects and arrive at proper analyses and

classifications. Perhaps in the not far distant future similar studies will be undertaken of the mind. I do not refer to psychology or psychiatry or studies of the mentally unbalanced or diseased.

It may be said, for want of a better term, that the individual has a mental structure with its foundations in heredity and training, and its growth and development influenced by surroundings, both physical and spiritual. Perhaps we do not know what the mind is. We do not know what electricity is. We can study it only by its manifestations. It is not so much a matter of electricity being used for grinding corn or furnishing the power to operate elevators, but it is an understanding of the principles governing the laws of electricity itself. We must have a similar view toward the problem of studying the structure of the human mind. It is true that no two individuals in the world are exactly alike. There is an approach to exact duplication physically perhaps, in the case of occasional twins, so far as their outward physical appearance is concerned. Their mental characteristics may have differences.

When we judge a negro, we classify him by the color of his skin, by the type of hair, the color of his eyes, his stature, and so on; and we judge a Chinaman by the color of his skin, the color of his eyes, and so on.

There are a good many reasons for believing that the mental characteristics of the colored man in his native heath and those of the Chinaman on his farm in China are much more distinctive than his physical characteristics. To what that is due, we might argue from now until doomsday, but we probably have not given sufficient study to this subject of anthropological psychology.

The problem of studying the individual mental structure seems to us at present a difficult one. It becomes even more difficult when we study the individuals in groups. We do know now that there are certain differences in points of view and in mental reactions of different races. Many years of study and analysis will be required before such problems can be even partially understood. We find that, based on the individual mental structure, we have a family or community attitude, and further integrated are national mental characteristics or we may say a national mental structure and racial mental characteristics and structures. I can think of thousands of objections to such a point of view, but more mature thought leads one to believe that as the years go on, progress should be made in studies such as this.

Turning again to physical matters, we find that in projective geometry the circle projected onto a plane surface may be almost anything in shape from a straight line through ellipses and ovals, to a perfect circle. If projected onto curved or warped surfaces

it may take on almost any shape. If we use a homely example, the individual looking into curved mirrors at Coney Island may see himself tall and thin or short and fat, or of almost any other form, depending upon how the mirror is made, and on where he stands in reference to the mirror. Similarly, what the mind receives depends somewhat on the position in which it is.

There are individuals, call them plotters, call them tricky if you will, or wise and far-seeing, who try to change our mental point of view; call the methods propaganda, if you will, call it advertising as applied to commercial business. Some persons by practical experience have learned something of this subject.

I once made the assertion that if I were king of the world I could stop two-thirds of the cigarette smoking within two years. A young advertising man, on asking how this could be done, was told, not by an order to stop smoking but by merely stopping the advertising. "No," he replied, "it could not be done in two years, but it could be done in three." Much advertising has educational value; some of it undoubtedly leads the population to a better life, but some of it perhaps does not.

Propaganda is something else again. It works in one of several ways: you may tell people things that are true and thereby lead them to do what you want them to do. You may tell people things that are partly true or wholly untrue to make them do what you want them to do; but much more effective than that, if you can get out propaganda to orient the man's mind and the woman's mind, then you have them for good, because when facts, pictures or what not impinge on their minds, they will judge of them from their changed point of view.

Now, there are some of us who have sales resistance or some sort of resistance to these methods and that is probably what maintains a certain amount of stability in our community.

Dangers to the Engineering Profession

Now how does this all apply to the situation of the engineering profession at this time? We need only consider some of the recent events and happenings that we believe affect the future of the profession. One of these is the incursion of governmental departments, bureaus and other organizations into the fields of private practice of engineering, and the Institute has recently passed three resolutions bearing on the subject. Undoubtedly there are influences at work at the present time for governmental organizations to take over more and more of the functions of private business, and to approach what we have known as fascism or national socialism. This tendency we believe should be checked.

There is, furthermore, the incursion of the labor union idea into the profession and one of our greatest engineering societies has only recently taken steps to establish a system of collective bargaining for engineers. This is indeed startling. The idea is incompatible with that of the professional man. Yet laws and governmental practice appear to have forced the issue and required some action to be taken. The present is the time, above all times, when the profession must be on the alert. It is important to be watchful of intriguing propaganda, ideas that are slipped in, leading to some form of action that the propagandist desires.

In the matter of public affairs new and strange ideas are propagated and find their way into action. The old-time straightforward American is startled and confused. He feels sure that the common sense of the sound American will prevail. Yet he sees that the ruling type of a generation ago has been unhorsed and hordes of new leaders with these strange ideas are getting into power. While he is now contributing his all to the effort to win the war, he yet must become aware of these apparent efforts to change the mental structure of our nation in which individual liberty and individual responsibility to the country should remain as highly important structural members.

It is difficult to reach a definite and final judgment in some of the matters that are going on because they are so closely interwoven with the war effort, but when there are evidences that centralization of power and destruction of individual initiative, and freedom in the practice of a profession or conduct of a business are involved for periods of peace beyond the war, then it is time to take some action. The Institute has done this in three instances.

In the first case the Civil Service Technical Guild of the City of New York, through their attorneys, petitioned the Supreme Court of the State in the County of New York to issue an order interpreting the Constitution of the State as preventing the employment by the City of New York of private practicing engineers and architects in making plans for post-war work. If successful, this proposed mandamus would also prevent the State itself, or any of its subordinate divisions, besides the City of New York, from employing private practicing engineers and architects. The Institute believes that the decision of whether or not to employ private practicing engineers should remain a function of the City and of the many communities in the State of New York that are too small and could not organize bodies of engineers for building a water supply or a sewerage system or streets, roads and bridges. There is no objection, of course, to the City of New York, or any other subdivision of the State, having an engineering staff for the conduct of its regular and routine engineering work, of which there is

much in a large city. When under competent supervision, good work may be done in this way. But when a staff of this kind builds up to large proportions to undertake some particular project and is then reduced, inefficiency and loss of time are likely to result. In such a case, and particularly in the case of the smaller communities, the private practicing engineer stands ready with his facilities and accumulated experience, to do the required engineering work for the many communities. In this case it is important to preserve the right and opportunity of the cities at their discretion to employ private engineers and architects and it is necessary to protect the practicing engineer in his right to practice so that he may be available when needed. Through long years of experience, through ability and hard work, under competitive conditions, the private engineer builds up a business. He becomes an expert in certain lines and makes his knowledge and skill available to whatever community or company needs them. This is an institution which should not be destroyed in a free country. Whatever the motive behind the petition to the court may have been, it would have resulted in much greater employment of draftsmen and engineers by city establishments. The case was justly and ably presented by our attorneys as *amicus curiæ,* and a decision was rendered bearing out our contention in favor of the City continuing the right, at its discretion, to employ private engineers. The case has been appealed by the Guild.

A resolution was passed by the Council of the Institute against the enactment of the pending so-called Kilgore and Patman bills. These would set up an office of scientific and technical mobilization, ostensibly for war purposes, but with provision to carry on the organization indefinitely in times of peace. Drastic powers are contemplated for the director of scientific and technical mobilization. The bills are long and the provisions are complicated, and the details cannot very well be presented now. Suffice it to say that the bills contemplate conditions and an organization that closely resemble what we understand has been done under the fascist and national socialist types of government. In many lines we must have government assistance. The Coast and Geodetic Survey, the Geological Survey, the Public Health Service, the Forest Products Laboratory, the Bureau of Standards have all done good work. The Institute resolution opposes enactment of the Kilgore-Patman bills in any form, since they have gone far beyond reason.

The third instance of definite action by the Institute Council was in the case of the extension of engineering services by Federal governmental bureaus and establishments into the fields of the private practicing engineer. Definite information of engineering work being done by governmental bureaus in the field of hydraulics in a

foreign country came to notice. Also a case in which an office of the Federal Government undertook to survey, design and build roads for a foreign government which had been in negotiation with a firm of private engineers.

These resolutions were passed on October 6, 1943, and since then other complaints about the invasion of the field of the private engineer by government organizations have come to notice.

Situations of this kind must be handled with knowledge and delicacy, for the Institute does not wish to interfere with or reflect on negotiations that may be undertaken by our State Department with foreign countries. The resolution of opposition does call attention to the problem and indicates that the facilities of the private practicing engineer should be utilized and not destroyed.

Copies of the resolutions named were sent to each member of the Senate and House of the United States Congress. Many favorable replies from Senators and Representatives have been received. A letter was received from the late Senator Barbour of New Jersey, which apparently was signed on the day he died. The results of our action have been encouraging, but we cannot end our efforts with that.

Members should keep the Council advised of any information bearing on these matters that come to their notice. Resolutions alone will not accomplish the purpose. It may require interviewing and much further study. Some of this work is beyond the limited resources of the American Institute of Consulting Engineers and co-operative action with other societies is desirable.

Problems in Public Life

Paralleling problems that arise in civil life under these existing unusual circumstances are even greater problems that arise in government during a war period such as we are now in. The problems of government are now so vast and so involved that but few can really completely understand them. To some the whole world may appear as a happy playground with the war as a dangerous plaything. To others it is a very serious business when sons and husbands and fathers are in the military services subject to injury and death to serve their country. To others come particular problems in special lines. We must all support our Commander-in-Chief who has on his shoulders such grave responsibilities. We must support the others, too, who are charged with grave responsibilities in these times to preserve our liberties and our form of government—our members of Congress, our Army and Navy. We must support the Treasury, although the squeeze seems to come on almost every one of us no matter what we do, and all gladly contribute to the needs.

Public Financing

Public finance is one of the subjects that today is of vast importance. Some of the ideas that have been propagated seem fantastic to a degree. We have heard and read about them, and many of these ideas do not seem to take with our membership. As we are a democracy we not only have the right but the duty to offer honest constructive criticism, and for this reason we wish to be educated in the matters of public finance.

Ideas in political economy that are on as sound a foundation as the principles of engineering appeal to us. It has always seemed to me that the political economist in the last analysis deals with human needs and wants—and minds—an integration of the needs and wants of the individual. That is always an uncertain factor—like the winds and the seas in the life of the engineer.

Introducing Guest Speaker, Professor Harley L. Lutz

We are very fortunate to have as our guest of honor and speaker a man who comes to us from Princeton University, where he is Professor of Public Finance.

Dr. Lutz is a well-known economist, a graduate of Oberlin College and Harvard University, from both of which he has received doctorate degrees. His teaching in economics since graduation has included Oberlin College, Stanford University and Princeton University. He has been adviser, both here and abroad, to various bodies interested in economic subjects. He was a member of the Commission of Financial Advisors to Chile in 1925, to Poland in 1926, to the Tax Investigation Commission in Utah in 1929, and director of the New Jersey Tax Survey Commission, 1930-1931. He is the author of many articles and books on economic subjects, particularly those relating to Taxation and Government Finance. He is highly recommended by our Secretary who has heard him speak, and by the Chairman of our Program Committee, Mr. Armstrong, who invited him to be with us this evening.

Gentlemen, it gives me the greatest pleasure to announce that the subject of the address for this evening is: "Something New in Engineering; *or*, Perpetual Motion in Public Debt"—a very alluring way to put it. I now take great pleasure in presenting Professor Harley L. Lutz of Princeton University. (Applause.)

Address by Professor Harley L. Lutz*

Dr. Lutz: President and Gentlemen:

My text is the following stanza by Alexander Pope:

*This address, somewhat revised, was published in *The Tax Review*, January, 1944.

"Vice is a monster of so frightful mien
As to be hated needs but to be seen;
Yet seen too oft, familiar with her face,
We first endure, then pity, then embrace."

Substitute deficit finance for vice and you have the specific application of this text. You will recall that when the federal deficits began we hated them. "Too often democracies have been wrecked on the rocks of loose fiscal policy." But in time we become familiar with the face—and the voice—especially over the radio. We endured the deficits for a time as a necessary evil, but we apologized for them and promised to end them soon. The next stage was to pity ourselves because the national income had not gone up enough to enable us to get rid of the deficits that had been incurred in the effort to boost the national income. In other words, we felt sorry that we could not lift ourselves by the bootstraps.

At last, we embraced deficit financing as a good thing in itself. Our sense of guilt was removed by the fiscal medicine men and "yarb" doctors from abroad and from our own universities who assured us that we were not really living in sin.

The first intimation that what we had mistaken for dissolute fiscal conduct was, in reality, a Puritanical standard of fiscal behavior which came with the announcement of a new financial philosophy. This new philosophy was given its première before T. N. E. C. It has been taken up by the second string medicine men like Stuart Chase and A. P. Lerner. Its central tenet is that taxation, spending and borrowing are to be viewed as instruments of policy. The chief policy of government is to be such manipulation of the level of prices, the volume of employment and the flow of income as will serve the aims and purposes of the clique or gang that is doing the manipulating.

Adam Smith disposed of all such planners in the following:

> "What is the species of domestic industry which his capital can employ, and of which the produce is likely to be of the greatest value, every individual, it is evident, can, in his local situation, judge much better than any statesman or lawgiver can do for him. The statesman, who should attempt to direct private people in what manner they ought to employ their capitals, would not only load himself with a most unnecessary attention, but assume an authority which could safely be trusted, not only to no single person, but to no council or senate whatever, and which would nowhere be so dangerous as in the hands of a man who had folly and presumption enough to fancy himself fit to exercise it."*

**The Wealth of Nations* (Cannon Ed.), p. 423.

The changed position of government which this new fiscal theory calls for means nothing less than a transition of political theory from the Anglo-American conception of government as an institution set up to perform certain community services to the Germanic conception of the state as the master. Instead of men being relatively free to take risks, to make mistakes, and to live, as Elbert Hubbard said, so as to be able to look any man in the eye and tell him to go to Hell, we are to be marshalled, regimented, told when to spend, or to lend to the government or to pay taxes, according to some master plan. Dr. A. P. Lerner put the capstone on this new doctrine in saying that Functional Finance

> ". . . is not especially related to democracy or to private enterprise. It is applicable to a communist society just as well as to a fascist society or a democratic society . . . Like any other mechanism, Functional Finance will work no matter who pulls the levers. Its relation to democracy and free enterprise consists simply in the fact that if the people who believe in these things (*i.e.*, democracy and free enterprise) will not use Functional Finance, they will stand no chance in the long run against others who will."*

We have known for years that the German finances have been set up on the lines advocated by Messrs. Hansen, Lerner, et al. While we have gone farther toward the Hitlerian system of finance than could be wished, we have not yet surrendered to it wholly. The prospects that this 20th Century version of John Law's scheme will bring Germany out on top are by no means what they may have seemed to be a year ago when Dr. Lerner wrote those lines.

Stuart Chase extols the German financial methods, but says:

> ". . . without rigid enforcement of wage, price and cost controls, however, inflation would have wrecked the whole program."†

Germany, Japan and Italy did lay the groundwork for enormous inflation, but the assets acquired through conquest tended for a time to validate and support the credit expansion. When these ill-gotten assets are stripped away again, we shall see how flimsy the real support of their respective debt structures is.

The key to this fantastic doctrine is the public debt, which is to be expanded or contracted in the degree required to maintain stability of employment, prices and production. In a free enter-

*A. P. Lerner, "Functional Finance and the Federal Debt," *Social Research*, February, 1943, p. 15.

†Stuart Chase, *Where's the Money Coming From?*, p. 87.

prise economy the market is the regulator which determines, through the price mechanism, the character and quantity of goods to be produced. The new fiscal theory would replace the market by the public debt as the regulator of economic activity. In Hansen's view, private enterprise can produce, but it cannot insure continuous and sustained demand. Only government can do this, so the result is a kind of co-operation in which business produces the goods and government creates the balance of the purchasing power needed to buy them.

The Hansen goal is full employment, a subject which has been approached usually in an emotional state bordering on hysteria. In all of the discussion that has so far occurred, there has been no reference whatever to the level or rate of wages. If Dr. Hansen or any of the other planners mean that we must henceforth provide full employment at war wages, we can agree at once that this is possible only through a large federal subsidy. An indefinite increase of the debt and a steady inflation of prices, would be inevitable.

On the other hand, if full employment means work for all at such wages as may be determined by equating the supply of labor and the demand for it, we need not be seriously concerned about unemployment even if there should be a depression. The deficits of the 1930's were incurred principally to subsidize wage levels that were unreal and artificial at the time. The housing subsidies are necessary mainly because of high level wage rigidities and output restrictions in the building trades. A dismissal wage is usually a subsidy to the high wage rates of those who remain on the job. It is clear that there can be no flexibility of prices or of business plans unless there can also be wage flexibility. The Hansen thesis is the more dangerous because it would use the public debt as the cushion and shock absorber against the rigidities that have been embedded in the economic system by group pressures, special legislation, and the reluctance of everyone to face unpleasant facts.

While the doctrine includes the assumption that the debt will decrease at certain times, the practical result is almost certain to be that there will be no net reduction. Debt retirement requires surplus revenues, and now that the people have learned how pleasant and easy it is to be supported by the government, they are not likely to consent to a curtailment of the bread and circuses just to redeem debt.

We are being conditioned to accept the idea that there is to be no debt reduction by various arguments designed to demonstrate the advantage and beneficence of a large public debt. Hamilton used such arguments, although he was concerned with federal funding rather than with debt for its own sake. Jay Cooke used

them during the Civil War. Dr. Hansen has written as follows about the English debt after Napoleon:

> "It is difficult to see that the financial and industrial development of England in the Nineteenth Century could have proceeded with the degree of steadiness and security actually achieved had there been no large public debt available for secure investment."*

The view that the English debt was an English blessing was not shared by the statesmen of that period, for they were continually struggling with taxes and sinking funds and conversions. Writing of the period 1860-1900, E. L. Hargreaves has said:

> "There was a conspicuous failure to take advantage of the great increase in wealth which was experienced during the latter half of the century in order to secure the redemption of the greater portion of the debt."†

The lack of a more resolute policy was not due to any faith in the great advantages of the debt, although this argument was used by members of Parliament who were unwilling to vote for taxes in sufficient amount to effect the redemption. The advantage of the debt, in providing a field of investment for trustees, was made a cloak for the real resistance to the necessary taxes. The patriotic argument was also brought in. "The Debt and the Empire were indissolubly linked together."

It is curious that the United States should have prospered so mightily during the Nineteenth Century, having no debt, if a public debt be really an essential condition to prosperity. In fact, in 1837 the federal government had no debt at all. From 1865 to 1901 the federal debt was reduced from 2,846 million dollars to 987 million dollars. This action did not impair our economic growth, nor is it true that a much greater debt reduction than actually occurred in England would have retarded the economic development of that country.

The debt rationalizing process also includes such arguments as the following:

1. It is said that a large part of the debt is held by banks, insurance companies and other institutions doing useful services. The interest income received helps them to perform these useful services.

The Colwyn Committee said the same thing about the ownership of the English debt, but it did not intend thereby to imply that

*A. Hansen, *Fiscal Policy and Business Cycles*, p. 155.
†E. L. Hargreaves, *The National Debt*, p. 199.

there should be no debt redemption. The case for an indefinite debt is weak indeed if we can find no stronger reason than that banks and insurance companies find the interest income helpful in their business.

2. The debt is no burden since we owe it to ourselves. In the sense that taxation and debt payment occur within the country, the effect is different than it would be if large foreign remittances had to be made. But it is pure sophistry, or rather a very impure sophistry, to say that because the bondholder receives cash payments in settlement of interest or principal obligations, the taxpayers do not experience a burden in paying taxes, or that they have no ground for being disgruntled. The unity of our common social interest does not go that far. By such logic there can be no case against any kind or degree of taxation whatever, for what is taken from some is at once paid out to others. Hence taxation should be no burden since we are paying the taxes to ourselves.

3. A nation may make itself poor by repayment of public debt. Dr. Hansen says this is true because such repayment tends to cause deflation, depression and unemployment.

You will note the curious gap between this proposition and the one just preceding, where everything was said to be lovely because we merely owed the debt to ourselves. If we do owe it to ourselves, how can a difference as to the pocket in which it is carried have such dire consequences on the economy?

Dr. Hansen's argument becomes still more curious, for he holds that payment of interest on the debt is beneficent, while payment of the principal is malevolent. The taxes collected to pay interest are not lost. They are paid right back again, and at the worst, they are merely taken from one group—the taxpayers—and paid out to another group—the bondholders. The trouble begins when we collect enough more tax to make a payment on the principal, for that will cause deflation, depression and unemployment.

In the rationalizing about the inflationary and deflationary effects of taxing, spending, and borrowing, there appears to be too great reliance on an over-simplified and hence unrealistic version of the merely quantitative element in the supply of purchasing power. While I am sure that they understand the point, Dr. Hansen and others often speak of the positively inflationary or deflationary effects of particular policies as if given quantitative changes in the volume of bank notes or bank deposit credits would produce definitely measurable and predictable results on prices or business activity. Thus, they say that taxation is deflationary, and bank loans are inflationary, as if these specific results always followed in measurable degree.

In this emphasis the factor of turnover, or velocity of circulation, is neglected. Total purchasing power is a resultant of two elements—actual quantity and turnover. A reduction of the quantity of bank deposits, such as might result from taxation to redeem bonds held by the banks, could be offset by more rapid turnover of the remaining deposits and there would be no deflation. In the other direction, an increase of bank deposits through government loans could be neutralized by slower turnover, as happened in the early days of pump-priming and devaluation. No inflation would occur.

This is one of the fatal defects of the new fiscal theory. The results aimed at would really require governmental control of both the quantity of money and credit and of their respective turnovers, in order to control the total volume of effective purchasing power. But there is no way of regulating the rate at which the citizens will use or spend their money, hence it becomes necessary that the entire emphasis be placed upon sheer quantitative changes in money and credit supply. The result is a false and futile fiscal philosophy which can produce only disastrous results.

As you are no doubt aware, the velocity of circulation has varied widely. This velocity is computed by dividing total debits to individual accounts by the total deposits. The following figures are based on data supplied by reporting member banks:

1929	50
1932	20.6
1934	19.2
1936	21.14
1938	17.78
1940	14.19
1943	19.55*

When we see that all the deficit spending of the 1930's was offset by increasing stagnation of funds it becomes easier to understand why pump-priming failed. On the other hand, if the velocity rate should rise to the 1929 figure of 50, it is very doubtful if any kind of taxation could diminish the quantity fast enough to prevent inflation.

The theories which have been expounded by J. M. Keynes and Dr. Hansen have been accepted and elaborated upon by numerous second string medicine men such as Stuart Chase and A. P. Lerner. Dr. Lerner's paper was published last February. Of it Professor R. M. Haig has written that the reader of Lerner's pages is "torn between admiration for its clear and bold logic and astonishment

*Walter E. Spahr, "Why Pump-Priming Dollars Have Not Primed."

at the assumptions it considers reasonable and the factors it considers significant."*

Dr. Lerner uses the term "Functional Finance" to describe the so-called principle of judging fiscal measures by the way they work or function in the economy. Two laws of functional finance were stated in the essay under review. The first law is as follows:

It is the responsibility of the government to keep the total rate of spending in the country on goods and services neither greater nor less than that rate which at the current prices would buy all the goods that it is possible to produce.

There are so many things wrong with this example of Dr. Lerner's clear and bold logic that it is hard to decide where to begin.

1. Even if government wanted to, it could not control the rate of spending, since it cannot regulate the total demand for goods except by drastic rationing, if the demand is keen, or by stepping in and purchasing all dead stocks, all slow-moving items on all shelves from the department store to the crossroads general store, and all surpluses everywhere not salable at the current prices, if private demand is too sluggish.

2. The so-called law evidently regards the current price level as a bench mark not to be changed, and as we shall see, its unchangeability is very important to the whole scheme. Just how much flexibility is to be allowed to individual prices is not indicated, but it must be clear that the quantity of goods which it is possible to produce is governed by the prices at which they can be sold.

3. The volume of goods that it is possible to produce is highly variable, depending, among other things, on the supply of capital and labor, on the number who want to work instead of collect a dole, on the incentives offered to enterprise, on various governmental policies, etc. Full employment is an important objective and maximum production is evidently deemed to be reached when all who want to work are engaged. But Lerner is as silent as Hansen about the wages and hours of employment.

In effect, we have here a statement of a so-called law which presupposes definite magnitudes, all under control, whereas the fact is that the greatest variety, change and flexibility are possible and likely. The government is to be responsible for keeping a balance or equilibrium among a vast number of highly sensitive variables. How is this to be done? Dr. Lerner's answer is as follows:

*R. M. Haig, "The Background of Our War Finance: A Rip Van Winkle Survey," *Political Science Quarterly*, September, 1943, pp. 321-337, at 333.

> "The government can increase total spending by spending more itself or by reducing taxes so that the taxpayers have more money left to spend. It can reduce total spending by spending less itself or by raising taxes so that taxpayers have less money to spend."

From this the author proceeds to what he regards as a shocking corollary, namely, that taxes should *never* be undertaken merely because the government needs to make money payments, but only when it is desirable that the taxpayers shall have less money to spend, for example, when they would otherwise spend wages to bring about inflation.

This is not shocking. It is merely funny. The author evidently believes, in common with Hansen and others, that mere quantitative changes in money supply will suffice to determine total purchasing power. He is quite obviously indifferent to the counterbalancing factor of turnover.

Further, he appears to believe that taxation in some way reduces the quantity of purchasing power. Taxation simply results in a transfer of funds to the government. If the government spends the tax receipts, and it must spend if its ordinary operations are to continue, the government employees and pensioners will spend instead of the taxpayers. With no change in the rate of turnover, there is the same amount of purchasing power after as before the tax.

Also, there is involved here the belief which is held by all advocates of progressive taxation, namely, that the only use made of individual incomes is to spend it in the market. No allowance appears to be made for the saving and investment of income whereby larger supplies of goods might be produced to meet the increased consumer demand.

Finally, we get an amazing suggestion regarding the chief functions of government. Instead of the services and functions which we ordinarily think of as being the reason for the existence of government—police protection, justice, education, regulation, welfare, conservation, etc.—the chief governmental function is to pump money into or out of the economy.

I leave it to your imagination and good sense to interpret the effect of this fiscal diastole and systole upon the personnel, the scope and quality of the public services, and the degree of respect which the citizens would entertain for their government.

The second so-called law of Functional Finance, as amended by Dr. Lerner, is that the government should borrow money only if it is desirable that the public should have less money and more

government bonds. He adds that this might be desirable if otherwise the rate of interest would be reduced too low and induce too much investment, thus bringing about inflation.

I assure you that I am not misquoting, although the lack of sense in what I have just read does suggest a distortion of the text, for it seems impossible that anyone could believe that it does make sense.

First, who is to decide between the *desirability* of bonds versus money in the hands of the people? We have already been told that when the people are deemed to have too much money it is to be taxed from them. Perhaps the OPA, in view of its distinguished record in point-rationing, could be asked to fix the point values of government bonds along with those for gasoline and tomato soup.

Second, suppose the people prefer money to more government bonds. Does this mean resort to the technique so successfully used by Hitler, Mussolini and Franco in confiscating the forms of private wealth which they did not want the people to own?

Third, when did the volume of investment begin to vary inversely with the rate of interest?

Fourth, when did over-investment produce inflation? Perhaps the author is thinking of stock market speculation. When the term investment is correctly used it means an application of funds which results in additions to capital equipment and productive capacity. Such additions, by increasing the output of goods and services, tend to prevent inflationary price increases.

We are told that Functional Finance rejects completely the traditional doctrines of "sound finance" and the principle of trying to balance the budget in any year or any arbitrary period. Under the taxing, spending, borrowing and lending policies advocated, any excess of money outlays over money reserves must be met, it is said, by printing new money. Resort to the bank loan or to the printing press will not cause inflation because the excess money can be pulled in by taxation and destroyed or hoarded.

That is, at one time the government is to withdraw from private hands through taxation or borrowing more than it pays out on its ordinary services and for interest, thus supposedly reducing the capacity of the people to spend. At another time the government is to pay out more than it takes in. The excess withdrawals can be destroyed if they consist of paper money. If they consist of bank deposits, the effect is a decline of taxpayer balances and a rise of government balances in the banks.

The sole purpose of this pumping is to regulate the rate of spending, but as I have pointed out, it is possible that counterbalancing tendencies in the velocity of circulation may neutralize the work of the pump.

The Swedish idea of a cyclical budget balance is rejected because of the lack of any guarantee that the maintenance of prosperity would permit the budget to be balanced even over larger periods (*i.e.*, than the business cycle). So, Dr. Lerner is forced to recognize that the result might be a continually increasing national debt, if the additional spending were provided by borrowing the money from individuals or banks instead of printing it.

But this would present no danger to society, in Dr. Lerner's opinion, as long as Functional Finance maintained the proper level of total demand for current output. As for the interest, it can be paid, he says, by borrowing still more.

It is time to pause again for some questions. Although the possibility is assumed that the budget may be indefinitely unbalanced, one wonders just what significance a federal budget would have in a system in which the chief governmental function is that of pumping money into or out of the economic machine.

Further we get the parodoxical result that no inflation would ensue from an indefinite period of budgetary deficits caused by pumping out purchasing power with little or no retirement, through taxation. Inflation would be staved off only because of the decline of velocity toward zero. But a declining turnover rate is usually indicative of caution, uncertainty, a preference for cash rather than goods, unreadiness to take risks, etc. Under such conditions production tends to decline and employment to fall off, despite pump priming.

Again, from whom will government borrow the money to pay interest? We are told that as long as the public is willing to lend, it makes no difference how many zeros are added to the national debt. If the public loses its taste for lending to the government, and hoards its money, the government, it is said, can print the money to pay its interest and its other obligations. It is evidently assumed that the people will gladly accept this printing press money. But suppose they won't. Are they to be forced to take it? And at what value? If the bondholder is compelled to take it at par for interest, on what terms can he dispose of it in buying the products or the services of other individuals? Dr. Lerner would probably say that any depreciation of the currency would indicate inflation and would be the signal to begin taxing. But if this depreciation should occur before full employment is reached then he would have an inflation to deal with while still facing the need to increase spending.

But Dr. Lerner offers an alternative supposition, namely, that the people, being unwilling to lend to the government, elect to spend instead of hoard their money. Private spending will then increase the total spending and the government will not have to borrow for

this purpose. If private spending goes too far, taxation must be used to prevent inflation. The proceeds can then be used to pay interest and repay government debt.

Note, however, that government disbursement of the tax receipts would put them right back into circulation again, and so the aim of inflation control through taxation would be defeated.

When we get down to the fundamentals of Functional Finance, it turns out that the scheme will not work under either assumption. If the people hoard instead of spend, or if velocity of circulation declines so as to lessen total buying, the government must begin to pump money in, and there is no way to prevent the currency from depreciating while some persons are still out of work. On the other hand, if the people spend freely and taxes are imposed, the government must severely restrict its spending in order to check the inflation. According to the degree of this restriction, there would be disorganization of the public services and demoralization of the public personnel.

Nothing is said about the kinds of taxes to be used, if and when the rules of Functional Finance should indicate that taxes are to be levied. If the pattern of income distribution were to be anything like that now prevailing, the bulk of the taxes would have to fall on the incomes under $5,000 in order to be of maximum effectiveness in inflation control through restraint of spending. Nor is anything said about the kind of index that would be used to show the onset of inflation, and thus to give the signal for taxation to begin. The Bureau of Labor index is under fire now from the CIO. We can only imagine the outcry that would meet any official notice to the effect that, beginning tomorrow, taxes must be paid because inflation has started.

The author is indirectly thinking in terms of a federal government only, although he makes no distinction in saying that taxes must not be levied. What would happen to state and local governments in those periods when taxation was out of season is not even hinted at. They have no present authority to print money, and no power to force investors to take their bonds. Yet their annual tax bill totals eight to ten billion dollars.

It may be that Dr. Lerner's views on the place of taxation in the fiscal program have been influenced by his lack of understanding of the subject. I quote the following from his essay:

> "Consider an investor in the $50,000-a-year income class who has accumulated $10,000 to invest. At 6 per cent. this would yield $600, but after paying income tax on this addition to his income at 60 cents on the dollar he would have only $240 left. It is argued, therefore,

that he would not invest because this is insufficient compensation for the risk of losing $10,000. This argument forgets that if the $10,000 is all lost, the net loss to the investor, after he has deducted his income tax allowance, will be only $4,000, and the rate of return on the amount he actually risks is still exactly 6 per cent.; $240 is 6 per cent. of $4,000. The effect of the income tax is to make the rich man act as a kind of agent working for society on commission. He receives only a part of the return on the investment, but he loses only a part of the money that is invested. Any investment that was worth undertaking in the absence of the income tax is still worth undertaking.

"Even if all income in excess of $25,000 were taxed at 90 per cent. there would be no discouragement in the investment of any part of income over this level. True, the net return, after payment of tax, would be only one-tenth of the nominal interest payments, but the amount risked by the investors would also be only ten per cent. of the actual capital invested, and therefore the net return on the capital actually risked by the investor would be unaffected."

Dr. Lerner is evidently talking about the income tax as it should be rather than as it is. He assumes prompt and complete deduction of all capital losses from income, regardless of whether or not they are short or long term losses, and regardless, too, of the existence of capital gains income. He further seems to assume that the individual has an option of investing his income *or* of turning it over to the government in taxes. If there *were* such an option it would no doubt stimulate investment tremendously. But the tax law does not say, "Unless you invest the government will take your money." It says, "If you have it, we want it." The tables compiled by the Ways and Means Committee to show the income tax load in 1944 reveal that the federal taxes alone, including one-half of the so-called unforgiven tax of 1942, will exceed total income in all cases where that total is $750,000 or above. A married man with two dependents receiving $500,000 will have only about $840 more, after taxes in 1944, than the man receiving $10,000. These figures show just how little chance the present income tax allows even the richest individuals to work for society on a commission basis.

In this fantastic program the terms tax and taxation should not be used, for they mean and connote an attitude by government toward the resources of the people which has entirely disappeared in Dr. Lerner's plan. If we no longer intend, by the word tax, to

mean contributions collected to defray the cost of public services, then we should find a new term to describe what is prepared. I suggest that we call it confiscation.

Likewise, the word bond should be dropped, for that word has always meant a pledge or promise to repay a certain value in future in exchange for a given value obtained today. If we substitute the term forced loan, it would seem more appropriate to pay the interest on such a loan by compelling the holder to accept fiat currency, which is simply another form of the forced loan.

One thing that Dr. Lerner's scheme lacks is a parallel to OPA, which should be called OMA, or Office of Money Administration. Its function would be to curb the black market that would emerge in his phoney printing press money, where people were trying to get rid of it for less than its face value.

One of the gravest perils of the post-war period will be the planners who are either ignorant of or indifferent to history. I doubt if we have much to fear from the Lerner scheme even if he does promise our ultimate downfall before some rival nation that has discovered what it thinks is bootstrap levitation. We do have to remember that there is a hard way as well as an easy way to solve our problems, and that the hard way is very likely to be the safe way. If the abuse of public credit and the printing press is really as safe as it appears to be easy, there would be no occasion to emphasize such historical phenomena as the Continental currency, the French Assignats, the United States Greenback or the German Reichsmark. All schemes for fiscal Utopia overlook the one basic fact about the kind of economic world we live in—"There is no free lunch." This fact is as applicable to a socialistic or communistic society as it is to a democracy. (Applause.)

THE PRESIDENT: Gentlemen, Professor Lutz has kindly consented to answer any questions that have arisen in the minds of his listeners. I am sure we agree that his ideas have been exceedingly sound and pleasant to our membership.

I am not sure whether the members have had time to formulate questions in their minds or not, so, like the teacher who prepared the experiment, I will give the members about a minute in which to think out their questions. In the meantime, I know there is one man in the audience who has a real conception of economic problems and I am going to call on him—he is Mr. Henry.

MR. HENRY: Well, Mr. President, in order to save time, I have written down my few remarks and its delivery won't take more than five minutes, so the audience need not be unduly disturbed by the appearance of this manuscript:

One of the most prominent proponents of "Perpetual Motion in Public Dedt" is Stuart Chase, a portion of whose report to the Twentieth Century Fund appeared in the public press a few weeks ago, from which the following quotation is made:

> "If you have no money, you cannot buy that beautiful new car. But if you, and all your fellow citizens, want to buy a beautiful new river development project, or a beautiful new war, there is nothing to stop you from doing so. What you can 'afford' moves into an entirely new dimension. You can buy your war and its costly equipment, right up to the limit of the nation's manpower, machine-hours and materials. Except for fears and financial traditions, the same formula can be followed in peacetime."

In general, we are prone to believe that the economic problems of the present day are unprecedented, and that they have been brought about largely by the great technological development that has taken place since the beginning of the Nineteenth Century. But a study of history will show that this is contrary to its teachings. For example, we find that two hundred years ago Mr. Chase's views on the difference between private and public debt was set forth by Terrasson, a noted French economist, an account of which is given in the book, entitled *Seven Great Statesmen*, by Andrew D. White, former professor of history and President of Cornell University, from which I make the following quotation:

> "Terrasson's arguments in behalf of unlimited issues of paper had been put forth in 1720. He revived the old idea which made the royal mint mark the essential sign and source of value, and he declared that the material used for bearing the sign of value is indifferent, that it pertains to the ruling monarch to determine what the material object bearing this sign shall be, and that, if there be placed in circulation a sufficiency of such objects thus authorized, the people thereby secure the capital necessary for commercial prosperity. . . .
>
> "Terrasson also made the distinction between the note of a business man and notes issued by a government, that the former comes back and must be paid, but that the latter need not come back, and can be kept afloat forever by simple governmental command, thus becoming that blessed thing—worshiped widely, not many years since, in our own country—'fiat money.' This whole theory, as dear to French financial schemers in the Eighteenth Century as to American 'Greenbackers' in the Nineteenth, had

> results, under the Orleans Regency and Louis XV, in ruin to France financially and morally, had culminated in the utter destruction of all prosperity, the rooting out of great numbers of the most important industries, and the grinding down of the working people even to starvation."*

It is a question whether peoples or governments ever learn from history, but whether, like children, each generation must learn from its own experience, not from the precepts of its predecessors. Much to my regret, I sometimes believe that Hegel, the noted German historian and philosopher, was correct when he said:

> "Peoples and governments have never learned anything from history, or acted on principles deducible from it."†

Nevertheless, I believe our people should be made aware of the teachings of history, particularly those relating to economics. A recent example of the practical repudiation of a public debt through inflation was that of Germany after the last World War. Many believe that this inflation was unnecessary, and that it was deliberately brought about by the government in order to reduce its liabilities. It is not likely that such an example will be followed by our own government after the war, no matter how large the debt may be. There is no doubt that our people, in paying taxes and buying war bonds, will make all the sacrifices necessary to win the war and so preserve their cherished way of life. But I fear that the views of such economists as Stuart Chase will give to the public the impression that unlimited borrowing may be continued after the war on the ground that if money can be raised without limit for purposes of destruction, it can also be raised for purposes of construction. But history will show that a government can overborrow as well as an individual, with the same unfortunate results. Although I doubt that our government's credit will be overstrained during the war, I fear that such a condition may be reached should extensive borrowing be continued after the war for the purpose of bringing about that "brave new world" that we hear so much about. It is more than likely that after the war we shall have to continue to adapt ourselves to a lower standard of living. Already a lower standard of living has been forced on the wealthy, and it is now being forced on the middle class. Later on, even labor will be adversely affected by the enormous expenditures caused by the war, and by the unemployment that may exist in the transition between war production and peace production.

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*Andrew Dickson White, *Seven Great Statesmen*, The Century Co., 1910, pp. 168, 169.
†H. L. Mencken, *A New Dictionary of Quotations.*

After the war all classes will desire to regain the standard of living to which they were accustomed in pre-war times. Therefore a study of history should be made to find out what it was that gave our country the highest pre-war average standard of living—materially speaking—ever known to man. Many of us believe that such a study would show that our pre-war prosperity was due principally to the system of private enterprise, and that this system should be revived as rapidly as possible after the war. With such a revival, we can look forward to an eventual higher standard of living than ever before known in our history. But if governmental regimentation, so necessary in time of war, be continued after its close, it will be impossible to bring about that advance in the standard of living which we all desire for all classes. (Applause.)

THE PRESIDENT: Thank you, Mr. Henry. I believe our members have now had time to think out their questions and I am calling for questions from the floor.

COLONEL SCHEIDENHELM: I don't think the occasion ought to go by without at least one question, and I will propound a small one that I think will be of interest to others and myself, and I hope Professor Lutz will forgive me for old-times' sake. I should like to have him tell us what formula he has evolved as the result of his thinking of the last forty years in the answer to the question of what is a safe debt for the United States. I suppose his answer would bring in the fact that a safe limit will vary from time to time and under varying circumstances, but we have heard much about the safe debt limit being first 30 billion dollars and then 50 billion dollars. Where do we go from here and when do we get onto unsafe ground?

DR. LUTZ: Mr. Chairman, that question couldn't be answered by anybody in any set or definite terms. I will tell you when a debt of any magnitude—whether it is 30 billion or 300 billion—comes to be unsafe and that is when the people get tired of paying the taxes necessary to carry it. Now, when that will happen, I can't say. It's going to happen, however. There isn't a Chinaman's chance that the war debt we are piling up in this war will ever be paid off. I don't think there is very much of a chance of its being maintained at anything like the present value.

I think Adam Smith, speaking out of a very much smaller experience 150 years ago, stated the case absolutely correctly when he said even then that history does not provide a single example of a large national debt ever being fairly and fully paid. Resort will always be had to some trick by which you can escape the burden,

and he pointed out that the most obvious and the most usual trick was devaluation. Now, we are actually in the process of devaluing the purchasing power of our money. With the advance in prices, the advance in wages—when you know that the amounts being paid to people who are learning a job have no relation in God's world to the value of the product which they are producing—we are actually doing the devaluing now.

Presently, after the war, some smooth-tongued and honey-voiced orator is going to come along and say to the people, "Now, folks, let's get wise to ourselves. Let's admit that it has already happened. Therefore let's make the state of facts a state of law and enact that hereafter the dollar shall be worth twenty-five cents instead of only fifty-nine or some other figure." By doing that, we lighten the burden of debt and we can keep it up until here in the United States we will be in the fix that Mark Twain tells about in the case of the gentleman who took a party to dinner in Rio de Janeiro. He was an American down there for the first time and he ordered dinner for six. They had a swell dinner with wine with every course and wonderful cigars and liqueurs after dessert and so on. Presently, with all deference, the proprietor brought the bill around and it was $188,000—you remember in Brazil they use the dollar sign as we do. Well, as the fellow looked at the bill he became very upset. He offered to pawn his watch and his cuff links and offered his letter of credit. He said he would telegraph home for the rest of his assets and then agreed to stay there and work out the balance of his bill.

Well, after the blood, sweat, and tears that had happened, somebody explained to him what the Brazilian milreis was like in purchasing power and that his $188,000 bill was only about $8 in American money.

We can go on to that level of devaluation. We can have a national income of 100 billlion dollars or 300 billion dollars or 1,000 billion dollars if we want to. As Mr. Wallace said sixteen times in that address reprinted yesterday that he made to the CIO —a very worthy audience for that kind of a talk: "We have got to keep the national income high so that we can carry the debt load easily." And if we push it up to 1,000 billion dollars, we can carry it very easily, but it may cost us $100 for a cup of coffee. (Applause.)

THE PRESIDENT: I would like to ask Professor Lutz when the Government shakes the debt, who carries the burden after that? Does the debt still remain when they devaluate the dollar? Doesn't somebody lose when the debt is shaken off?

Dr. Lutz: Well, of course, the people who hold the debt lose, the people who have given up today, as all of us are going to give up again for the fourth time, part of the command which we now have over goods and services in the form of money, which would buy for us, if we could get out of subscribing for the debt, so much merchandise at a certain price. Now, when they cut the value of currency or repudiate the debt in some other way, the bondholder who is saving today to buy bonds and who expects after the war in all good faith that when he cashes his bond he can go out and buy a substantially similar quantity of goods or services as that which he didn't buy when he bought the bonds—he is the fellow who is going to be out of luck. He is the fellow who could have bought his cup of coffee today for ten cents and may pay two dollars for it after the repudiation—or one hundred dollars for it.

Mr. Sielke: In the last war, Dr. Lutz, when the Liberty bonds were sold, the people purchased those bonds at par; and I think the various member banks of the Federal Reserve Banks also had to purchase these Liberty Bonds. As I understand it, they had to take a loss if they sold their bonds at the quoted price of seventy-five or eighty later on. Is that the method that will probably be used this time?

Dr. Lutz: No, I don't think it will happen that way this time. The Treasury and the banks are in the same fix as a fellow would be who had a bear by the tail. He can't hold on and doesn't dare let go. The mischief has been piled up by the Treasury policy over the last ten years of making their deficit financing seem wonderfully cheap and easy because the money costs so little. More than once, they have pointed to the fact that up until the war financing began, in spite of the great increase in the debt, we weren't paying anything like as much interest as we paid at the end of the last war, because we were borrowing for so much less. But you know why we borrowed for so much less—because the Treasury and the Federal Reserve Banks used the blackjack on the money market and they didn't dare lend for any more or try to exact any more. Consequently, the banks were filled with cheap paper, much of it bought at a premium even with those low rates of interest.

The solvency and security of the whole banking structure rests upon the maintenance of the value of those phoney assets. They are phoney at that rate of interest. If they were 4 per cent. bonds or even 3 per cent. bonds, they would be a much better asset than they are at the rate of interest and at the prices at which the banks

have bought them. They don't dare let those bonds sag. If the banks should ever start selling their negotiable bonds in any large quantity, the Federal Reserve Banks would buy them, the Treasury would buy them, and they would simply step in on whatever scale was necessary to support the market. They don't dare let the market go as they could afford to with the Libertys after the last war, so I don't anticipate that there will ever be any wholesale slump in the market quotations of Federal paper.

I think one of the most unfortunate things about the war financing at the present time is the fact that we have tried to make this a 2½ per cent. war. We are trying to bull our way through with the enormous borrowing that is going on on roughly a 2% per cent. basis. I submit to you that it's perfectly evident that if we have to borrow money and if we want to borrow it from individuals, if we would offer them 3½ per cent., we would get more billions; if we would offer them 4 per cent., the Treasury would be swamped with money, but nobody is particularly interested except under compulsion at the rates of interest the Treasury is offering.

To come back, I would say that they are not going to let the value of the bonds slump. I think every bond will be redeemed in something, at the time it is due. What that something will be will be other pieces of paper—the Federal Reserve Note, the United States Greenback, the Silver Certificate, or what have you. Now, what those will buy when you go into the market will be anybody's bet. There is where the real slump in value will take place. It will not take place in the redemption value or the market value of the bonds themselves. They will be monetized and then when you get your pocket full is when you will take your beating on your loss of investment.

VOICE: You mean on the loss of purchasing power at that time?

DR. LUTZ: That is right.

MR. VEATCH: What can we do about it?

DR. LUTZ: You can't do anything about it.

MR. VEATCH: Can you say whether there is any soundness in the fact that it seems to many of us amateurs to be safer to increase the national debt for war purposes than for peace purposes or is that just pure sentiment?

Dr. Lutz: It isn't safe to increase the national debt now for any purpose, war or peace. What we ought to be doing is taxing a great deal more heavily than we have the guts to tax; but in order to do that, we have got to have the kind of tax that will bring in the money. We are using taxes that have about reached the limit of productivity. You can carry a much larger load if you can get it all distributed around you, on both shoulders and in both hands and some around your waist, than you can if you rest it all on a little pin-point on one shoulder. It is all on that one little pin-point now and we are trying to increase the load there. We ought to start with a general sales tax. (Applause.)

Mr. Trevithick: What do you think the Republican administration will do at the next election?

Dr. Lutz: I haven't any more faith in what the Republicans know or can do or will do than I have in what the Democrats will do. I will tell you something: I am going to make an unofficial nomination, although it is not the first. As I look the field over, being a life-long Republican, I would rather vote for Harry Flood Byrd of Virginia than any other man in the country. (Applause.)

Mr. Creager: Dr. Lutz said that there is nothing we can do about it. There is a lot we can do about it. We can invest in bonds because nobody expects everyone will carry on a war without having to pay for it, and we can invest in bonds and take our medicine. We expect something to happen, but we can take it afterwards.

The President: I would like to ask Professor Lutz this question: We have now a national income of, well, say, 130 billion dollars. How much of that 130 billion dollars is really money that the Government is borrowing and paying out in various ways? How much of that 130 billion dollars is really borrowed money?

Dr. Lutz: Well, I don't know. As a matter of fact, all of these figures about the national income are under the very gravest suspicion. I understand that there is a document being put out by the Bureau of Economic Research, where some of the original work on national income statistics was done, that makes a pretty good case to the effect that what we can honestly call the national income today is only about 106 billion dollars instead of 150 billion dollars. That simply means that what has been going on and what is now under attack has been an enormous amount of double counting in the makeup of the so-called national income figures, which renders the whole thing so suspect that I just don't like to talk about it.

Now, I would like to say to this gentleman over here that I am buying bonds and have been for years and expect to keep on buying them. I didn't mean to imply that anyone shouldn't. When he sets his teeth and says, "We can take whatever happens to us," sure, that is what we will have to do. There is nothing else we can do about that, but I will say in emphasis of what I said a while ago, if we had had the sagacity and the sand to begin in 1940 with the kind of tax system that we should have inaugurated then, we could have gone as far as we have without anything like the volume of debt that has been piled up and consequently we wouldn't have had to take after the war as much as we are going to have to take. There were so few people though who would agree with me in that as early as 1942 or even 1943 that I rather despaired of that kind of a change. It's too late for it now.

MR. BURPEE: We have all been profoundly moved by what Professor Lutz has had to say. It has passed over the heads of a great many of us because we aren't used to these problems of finance, except when we have to make out our income tax. Most of us are in the class that will go broke when the war is over and we will thank God, if we are broke, we still have a country, so we will buy bonds and go broke, although we would rather be broke thinking that the rest of the country was going along with us.

I wish that Vice-President Hammond would take the Chair for about half a moment. May I have the request acceded to?

(The Vice-President assumed the Chair.)

MR. BURPEE: Vice-President Hammond, it is my very great pleasure to propose at this time a rising vote of thanks to Professor Lutz for this fine talk he has given us this evening and the only reason there has been so little discussion is because we are all on his side, and at the same time a rising vote of thanks to our retiring President for his year of service.

(The audience arose and applauded.)

(The President resumed the Chair.)

THE PRESIDENT: If there is no further business, we will consider the meeting adjourned.

(The meeting adjourned at ten-thirty o'clock.)

APPENDIX

Report of the Secretary, Philip W. Henry

In 1943 the Institute lost six members by death: Harold W. Hudson of New York, 68 years of age, on January 15; C. E. Myers of Philadelphia, 55 years of age, on January 15; Charles T. Main of Boston, 87 years of age, on March 6; J. R. Worcester of Boston, 83 years of age, on May 9; Robert Spurr Weston of Boston, 73 years of age, on July 29, and John W. Alvord of Chicago, 82 years of age, on July 31. Messrs. Alvord and Worcester were charter members. Detailed memoirs will be found in the minutes of meetings of the Council, so that only a brief reference will be made here.

Colonel Hudson was born September 29, 1874, at Pittsburgh, and in 1896 was graduated from the College of Engineering, University of Minnesota. During the next three years he was engaged on highway and railroad construction in the west and on dock construction in Tampico, Mexico. The next three years he was engaged in railroad surveys in the central west and southwest. From 1903 to 1917 he was connected with the Pennsylvania Railroad and had much to do with the design and construction of Sunnyside Yards and approaches to the East River Tunnels, as well as the Hell Gate Bridge and approaches, all in New York City. In 1917 he went overseas as captain in the 11th Engineers, and retired in 1919 with the rank of Lieutenant-Colonel. For the next four years he was engaged in railroad surveys and construction in Virginia, followed by two years in the electrification of the Virginian Railway and of the New York Connecting Railway. For two years he was in private practice and in 1928 he was employed by the New Jersey State Highway Department on approaches to New York City from the southwest. In 1934 he became Engineer of Construction of the Triborough Bridge Authority, New York City, and later became associated with Madigan-Hyland, Consulting Engineers. He was a member of the American Society of Civil Engineers of which he was a director from 1939 to 1941. He became a member of the American Institute of Consulting Engineers in 1936.

Colonel Myers was born in McKeesport, Pa., January 31, 1888, and was graduated in 1909 from the Pennsylvania Military College at Chester, Pa., with the degree of Bachelor of Science, where for two years he was engaged as Instructor of Military Science. In 1911 he joined the staff of the Pennsylvania Highway

Department, with assignments to supervise work in different parts of the state. In 1918 he obtained leave of absence to enter the United States Army and, on his retirement from the Army, resumed his work for the Department, becoming Deputy Chief of the Bureau of Highways from 1926 to 1928. In 1928 Mayor Mackey of Philadelphia appointed Colonel Myers a member of his cabinet and made him Director of the Department of Transit. In 1932 he left municipal service and established an office as consulting engineer which he continued until 1940, when he again entered the service of his country. Colonel Myers held important posts in both World Wars. In January, 1918, he entered the Army as Captain in the Corps of Engineers, became a Major, retained his military standing as a member of the Officers' Reserve Corps and subsequently was advanced to the rank of Lieutenant-Colonel. In 1941 Colonel Myers was promoted to the rank of Colonel. He was killed in an automobile accident and was buried with full military honors in the American plot of Brookwood Cemetery at Woking, Surrey, England. At the time of his death Colonel Myers was Director of the Pennsylvania State Registration Board of Professional Engineers. He was a member and former director of the American Society of Civil Engineers and a member of other technical and social organizations. He became a member of the Institute in 1934.

Mr. Main was born in Marblehead, Mass., February 16, 1856. He was graduated from the Massachusetts Institute of Technology in 1876, and for three years was an instructor there. He then secured a position with the Manchester Mills of Manchester, N. H., as draftsman. Thus began the career which led to his becoming a great "mill engineer." Here he remained until 1891 when he devoted himself to private practice. He formed a partnership with F. W. Dean under the name of Dean and Main. This partnership existed for fourteen years when Mr. Main continued under his own name, which in 1926 was changed to Charles T. Main, Inc. He gathered around him a fine staff who gradually assumed greater responsibility, but Mr. Main retained his active participation until his death. Mr. Main's firm did much consulting work for Stone & Webster on hydro-electric plants such as the Taylor's Falls project in Minnesota, the Keokuk development on the Mississippi River, Houser Lake dam on the upper Missouri River, Big Creek development in California and the Conowingo project on the Susquehanna River. Of his mill work (mostly textile) the most extensive was that of the American Woolen Company in its large construction enterprise covering twenty years. He was responsible for the difficult foundations of the buildings of the Massachusetts Institute of Technology, and was consultant in the design

and construction of the large parcel post building at South Station, Boston. As to outside activities, Mr. Main in 1906 became a member of the governing board of M. I. T. and except for one year continued until his death. He was president of the American Society of Mechanical Engineers in 1918, was a charter member and later president of the Engineers' Club of Boston, also president of the Boston Society of Civil Engineers in 1912. He was an honorary member of the American Society of Mechanical Engineers and a recipient of its notable A. S. M. E. medal. After the Armistice he went to France as one of a committee of engineers to advise on the condition of industries in the devastated regions. Between 1886 and 1932 he wrote a number of technical papers on textile mills, steam and water power problems and on other matters of particular interest to mechanical engineers. He became a member of the American Institute of Consulting Engineers in 1916 and was its president in 1929.

Mr. Worcester was born in Waltham, Mass., May 9, 1860, and was awarded the degree of A.B. by Harvard College in 1882. From 1883 to 1894 he was with the Boston Bridge Works, later as chief engineer. In 1894 he established an office as consulting engineer, and among his clients were the Boston Transit Commission and Boston Terminal Company. From 1906 he did business under the name of J. R. Worcester & Company, to which he became consultant on his retirement in 1924. Mr. Worcester designed most of the elevated structures of the Boston Elevated Railway, the steel work of the Boston subway and the viaduct across the Charles River dam. He designed the steel work supporting the dome of the Bulfinch State House of Boston, and steel arch bridge over the Connecticut River at Bellows Falls. He was a member of the commission that built the Hampden County Bridge at Springfield, Mass. From 1904 to 1917 he was a member of the special committee on concrete and reinforced concrete of the American Society of Civil Engineers, which was later merged with the American Society for Testing Materials. He had much to do with establishing standard designs for reinforced concrete structures. In 1921 he was appointed by Herbert Hoover, Secretary of Commerce, to a committee to formulate building codes and standards. He was past president of the Harvard Engineering Society and of the Boston Society of Civil Engineers. In 1914 he received the Desmond Fitzgerald medal for his paper on "Boston Foundations." He was an honorary member of the American Society of Civil Engineers, also a charter member (1910) of the American Institute of Consulting Engineers.

Mr. Weston was born on April 29, 1870, in Concord, N. H., and was graduated at Amherst College in 1891 with a B.Sc. degree.

In 1894 he received the degree of A.M. For two years he was a student at the Massachusetts Institute of Technology and in the winter of 1896-1897 he attended lectures at the University of Berlin. His technical education was largely in the field of chemistry and in his first work he was assistant chemist in the classic experimental work in water filtration done at Louisville, Ky., under George W. Fuller. In 1899 he became associated with William Wheeler, Boston, in private practice as civil and sanitary engineer. In 1900 he assisted Colonel Miller in the water purification experiments at Washington, D. C., and later he was in charge of similar work at New Orleans. Thus Mr. Weston had an important part in the pioneering work of water purification. In 1916 he formed the partnership of Weston and Sampson, which continued until the time of his death. Their work extended to several states, and to many cities, corporations and institutions in problems of water supply, water purification, sewerage, sewage treatment and industrial waste disposal. During the first World War he was retained by the North Jersey Water Supply Commission, by the U. S. Shipping Board and by the U. S. Housing Corporation. Mr. Weston was engaged as a sanitary expert in many important litigations, including the case of the United States *vs.* The Sanitary District of Chicago; the Delaware River case of New York *vs.* New Jersey and the Connecticut River case of Connecticut *vs.* Massachusetts. Mr. Weston was co-author of *Water Works Handbook,* by Flinn, Weston & Bogert, published in 1916, as well as of numerous papers presented before various technical organizations. He was a member of the American Society of Civil Engineers, American Chemical Society, American Institute of Chemical Engineers, American Public Health Association, American Water Works Association and other technical organizations. He was past president of the New England Water Works Association, the Boston Society of Civil Engineers and the Boston Rotary Club. He became a member of the American Institute of Consulting Engineers in 1916 and was vice-president in 1931.

Mr. Alvord was born January 25, 1861, at Newton Center, Mass., now a part of Boston. In 1879 he entered the employ of his brother-in-law, John A. Cole, who was a practicing engineer serving the suburbs of the then rapidly growing Chicago. In 1883 his employer admitted him to partnership under the firm name of Cole & Alvord. In 1888 he devoted nearly a year to an inspection trip to the eastern part of the United States and to Europe in the Study of hydraulic and sanitary works, visiting England, France, Germany, Austria and Italy. Upon his return he resumed his practice under the firm name of Cole, Alvord & Shields. In 1890 he headed the Department of Surveys and Grades of the World's

Columbian Exposition. He was one of the first and last of the exposition employees and assisted in the final report of Daniel H. Burnham, Director of Public Works. Upon completion of this work he made another inspection trip to England and France. In 1902 he formed a partnership with Charles B. Burdick under the firm name of Alvord & Burdick which, in 1923, became Alvord, Burdick & Howson, which still continues. In 1899 Mr. Alvord was employed by the Dubuque Water Company to value their property and to testify before a valuation commission. Then began half a lifetime of similar work. His fairness frequently led to his selection by other engineers as an arbitrator. In 1910 he served as a member of an Engineering Commission on Sewage for the City of Milwaukee. In 1925 he thoroughly studied the Chicago sewage disposal problem in a report to the U. S. Secretary of War on the relation of sewage treatment to the diversion of water from Lake Michigan. Mr. Alvord was employed by the U. S. Steel Corporation to design the waterworks and sewers for Gary, Ind. In 1917 Mr. Alvord served as supervising engineer for the Constructing Quartermaster on Camp Grant, Rockford, Ill. Late in 1917 he went to Washington as chief engineer of the U. S. Housing Corporation. In his busiest years Mr. Alvord found time to serve the public when called upon, although he never held public office. In 1913 he was granted the degree of Civil Engineer by the University of Wisconsin. He was honorary member and past president of the Western Society of Engineers, American Water Works Association and Illinois Society of Engineers. He was a member of the Institution of Civil Engineers of Great Britain. Mr. Alvord joined the American Society of Civil Engineers in 1893, was a director from 1917 to 1921 and was elected honorary member in 1935. He was a charter member (1913) of the American Institute of Consulting Engineers.

These engineers, all of whom became eminent in their profession, illustrate the diversity of the activities of the members of the Institute: Colonel Hudson in railroads and highways; Colonel Myers in state and municipal highways; Mr. Main in the design and construction of textile mills and hydro-electric plants; Mr. Worcester in bridges and structures; Messrs. Weston and Alvord in water works and sewerage.

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The Institute has been fortunate in having received only one resignation, that of William O. Hotchkiss of Troy, N. Y.

Twelve new members have been admitted: Charles A. Emerson, Elwyn E. Seelye, Arthur S. Tuttle, George V. T. Burgess, Leslie G. Holleran and William H. Mueser of New York; James

J. Doland of Champaign, Ill., Samuel M. Ellsworth and F. M. Gunby of Boston; Lawrence E. Peterson of Milwaukee; Charles M. Upham of Washington; Gustav J. Requardt of Baltimore. The membership now totals 129, compared with 124 a year ago.

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The activities of the Institute will be found in the minutes of the monthly meetings of the Council and therefore will not be given here in detail. However, it may be well to mention that several publications of the Institute are still in demand, particularly the brochures entitled "The Cultural Advantages of the Study of Engineering and The Cultural Advantages of the Study of Latin," by President Hotchkiss of Rensselaer and President Comfort of Haverford, of which 1,700 have been mailed; "Lesson of the Last World War," by Dr. James T. Shotwell, of which 1,325 have been mailed; "The Engineer and Post-War Planning," by Col. Henry M. Waite and Dr. Alvin H. Hansen, of which 535 have been mailed. The demand for the "Far East Problem," by General Frank R. McCoy, has not been so great as was anticipated, only 300 having been called for.

Mr. Frank M. Masters represented the Institute at the 47th annual meeting of the American Academy of Political and Social Science, Philadelphia, April 9-10, 1943.

Mr. Alonzo J. Hammond represented the Institute at a luncheon conference under the auspices of the Research Institute of America, Washington, April 3, 1943.

Mr. Louis R. Howson was appointed to represent the Institute on the Committee for Joint Action on Post-War Sanitation sponsored by Sewage Works Engineering.

Mr. Henry was appointed to represent the Institute at a conference called by the Russian Economic Institute, May 28, 1943, to consider post-war planning for American business in Soviet Russia.

Admiral Bakenhus represented the Institute at several sessions of the annual meeting of the Chamber of Commerce of the United States held in New York, April 27-28, 1943.

Dr. Charles F. Scott represented the Institute at the conference called by the Committee on Registration of Engineers, American Society of Civil Engineers, May 24, 1943.

Admiral Bakenhus represented the Institute at a dinner conference held at the University Club, September 23, by the Association of Consulting Management Engineers.

Mr. Charles E. DeLeuw represented the Institute at the annual meeting of the Highway Research Board, Chicago, November 27-30.

President Bakenhus and Secretary Henry were guests at the annual dinner of the American Society of Mechanical Engineers, Hotel Pennsylvania, New York, December 1, 1943.

At a special meeting of the Executive Committee of the Institute, held July 9, it was decided that the Institute should file a brief, *amicus curiæ*, in opposition to the petition filed before the Supreme Court of New York State by the Civil Service Technical Guild which would prevent architectural and engineering firms in the preparation of plans for construction of post-war projects in New York City. The decision of the Court was against the Guild, but appeal has been taken.

At the meeting of the Council held October 6, 1943, the following resolutions were passed:

WHEREAS, there have been brought to the attention of the American Institute of Consulting Engineers the so-called Kilgore Bill, 78th Congress, 1st Session, S. 702, and its counterpart, the so-called Patman Bill, 78th Congress, 1st Session, H.R. 2100, and

WHEREAS, the Bills propose to establish for time of war and of peace an Office of Scientific and Technical Mobilization which is given powers in the fields of science, research and engineering that are specific authorizations for the application of principles and dictatorial methods bearing resemblance to those used by Governments in Fascism and National Socialism, and

WHEREAS, the effects of the establishment of such an Office would be to disrupt the present highly successful methods of scientific and technical research, which have been so extraordinarily successful in our present age, and

WHEREAS, the highly centralized control will deaden private and individual initiative upon which great progress in science and industry in our country has been based,

NOW, THEREFORE, BE IT RESOLVED—

FIRST, that the American Institute of Consulting Engineers, through the Council in which is vested the government of the Institute, hereby records its opposition to the passage of these bills or either one of them, or of any bills granting similar powers.

SECOND, that all members of the Institute be advised to communicate promptly with their Representatives in Congress and Senators, recording opposition to these bills, and

THIRD, that a copy of this resolution be sent to all members of the Senate and of the House.

* * *

WHEREAS, The Public Roads Administration, according to report, is surveying and preparing to supervise and assist in the construction of roads in Bolivia,

WHEREAS, The Tennessee Valley Authority, according to report, is assisting in the designing and construction of hydro-electric plants in Russia,

WHEREAS, it is reported to us that other bureaus and agencies of the Federal Government are increasingly carrying on more outside engineering work both at home and abroad, and even planning for further enlargement of the scope of such work,

WHEREAS, engineers under regular pay from the United States Government, if released even temporarily to serve a foreign government, run the risk of serving two masters, whose interests may not be identical, a situation which would be considered unethical by engineers in private practice,

WHEREAS, the bureaus of the Federal Government are supported by the taxpayers to carry on work in their behalf and their function presumably does not extend to consulting services to a foreign country,

WHEREAS, such services of our federal bureaus to foreign countries are normally not essential, due to the ample facilities made available by engineers in private practice,

WHEREAS, it has been the longstanding practice of the Federal Government, under certain circumstances, to employ private engineers and architects to report upon design and to construct special projects,

WHEREAS, if the practice of the employment of engineers of federal bureaus or other governmental agencies for engineering projects in foreign countries be adopted, these bureaus and agencies would have to be unduly enlarged, thus burdening taxpayers unnecessarily.

NOW, THEREFORE, BE IT RESOLVED by the American Institute of Consulting Engineers through the Council in which is vested the government of the Institute:

FIRST: That it be regarded as inadvisable, improper and not in the public interest for the Federal Government to tax the public, including the practicing consulting engineers, and to use the proceeds in part to pay its employees or agents for doing work in

foreign territory outside of their regular duties and which work consulting engineers are qualified, competent and prepared to do;

SECOND: That the effect of such action is to deprive the consulting engineers in part of the opportunity to make a living, in effect depriving them of their property without just compensation;

THIRD: That the officers of the Institute advise with officers of other societies of engineers and professional men and of the Chamber of Commerce of the United States with a view to co-operative assistance;

FOURTH: That all members of the Institute be requested to communicate promptly with their Representatives in Congress and Senators; and

FIFTH: That a copy of this resolution be sent to each Senator and Member of Congress.

These resolutions were transmitted November 16 to Senators and Representatives in letters signed by President Bakenhus. Replies were received from 28 Senators and 41 Representatives, most of them non-committal, although 8 Senators and 12 Representatives were definitely against the Kilgore Bill.

At the November meeting Dr. Dugald C. Jackson referred to the work done some years ago by Mr. Lewis B. Stillwell and himself representing the Institute in conferring with manufacturers who were acting as consulting engineers to the detriment of those in private practice. The Council referred this matter to the Development Committee to ascertain the present situation with respect to manufacturers and contractors.

At the December meeting Messrs. George H. Burgess, John P. Hubbell and Malcolm Pirnie were appointed a committee to determine the best method of procedure against the limitation of $25.00 per day for consulting engineers by the Army and Navy.

At the December meeting there was referred to the Committee on Legislation H.R. 3328 (S. 1537) a bill introduced by Representative Walter H. Judd which would authorize the employment of engineers in private practice on Government projects.

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Meetings during the year were:

January 18: Annual dinner meeting held at the University Club, 1 West 54th Street, New York, at which the principal speaker was Major General Frank R. McCoy (Retired) who spoke on "The Far Eastern Problem." As General McCoy served for some years in

the Philippines and as he was a member of the Lytton Commission which investigated the seizure of Manchuria by Japan, he spoke with authority, as well as with eloquence.

January 19: Luncheon meeting of the Council, Engineers Club, 32 West 40th Street, New York, at which the following officers were elected for the ensuing year: R. E. Bakenhus, President; Alonzo J. Hammond, Vice-President; James Forgie, Treasurer; Philip W. Henry, Secretary.

February 3: At the luncheon meeting, Engineers Club, Dr. Harry S. Rogers, President of the Brooklyn Polytechnic Institute, who had served as Chief of the Rubber and Rubber Products Branch of the War Production Board, made an illuminating address on the rubber situation.

March 3: At the luncheon meeting, Engineers Club, members and guests heard a most entertaining address on "The Engineering of Consent in a Democracy" by Edward L. Bernays, an outstanding public relations counsel. A summary of his address was sent to the membership.

April 7: Members and guests attending the luncheon meeting, Engineers Club, heard an informative address on German Military Transport by Dr. Gustav Stolper who was, prior to 1933, prominently connected with the management of railroads in Germany. A summary was sent to the membership.

May 5: Dr. William S. Carpenter, Head of the Department of Politics, Princeton University, at the luncheon meeting, Engineers Club, spoke on post-war planning, which elicited numerous questions from those present. A summary was sent to the membership.

June 1: At the luncheon, Engineers Club, Mr. William B. Benton, Vice-Chairman, Committee for Economic Development, made an excellent address in which he told of the important work of his committee which advocates post-war organization of business under the auspices of private enterprise rather than of government.

September 8: At this luncheon, held at the City Midday Club, 25 Broad Street, Dean Thorndike Saville made a most informative address on "An Engineering College at War" based on personal experience. A summary was sent to the membership.

October 6: At the City Midday Club luncheon members and guests heard with profit an address on "Petroleum Reserves of the United States" by Dr. Benjamin T. Brooks, well-known consulting chemist. A summary was sent to the membership.

November 3: At the luncheon meeting held at the City Midday Club, members and guests were brought up to date on "Powder Metallurgy" by Professor Gregory J. Comstock of Stevens Institute of Technology. A summary was sent to the membership.

December 1: Dr. John M. Weiss, consulting chemical engineer, at the City Midday Club told of the advance that has taken place in the manufacture of Plastics in recent years. A summary will shortly be available to the membership.